RAGHU ENGINEERING COLLEGE

(Autonomous)

(Approved by AICTE, New Delhi, Permanently Affiliated to JNTU-GV, Vizianagaram, Accredited by NBA & Accredited by NAAC with A+ grade)

INTRODUCTION TO PROGRAMMING

AR23- B.Tech (Common to CIV, EEE, ME and ECE)

I-B.Tech., II-Semester

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Course Code : **Internal Exams :**

External Exams :

Course Objectives:

- To impart adequate knowledge on the need of programming languages and problem-solving techniques and develop programming skills.
- To enable effective usage of Control Structures and Implement different operations on arrays.
- To demonstrate the use of Strings and Functions.
- To impart the knowledge of pointers and understand the principles of dynamic memory allocation.
- To understand structures and unions and illustrate the file concepts and its operations.

Course Outcomes:

At the end of the Course, Student should be able to:

CO1	Demonstrate the Fundamental concepts of Computers and basics of computer programming and problem-solving approach	Apply
CO2	Solve the problems using selection, branching and looping statements	Apply
CO3	Use of Arrays and Pointers in solving complex problems	Apply
CO4	Develop Modular program aspects and Strings fundamentals	Create
CO5	Develop the ideas of User Defined Data types, files	Create

UNIT I: Introduction to Problem Solving and C Programming (10 hours)

Programs and Algorithms, Computer Problem Solving Requirements, Phases of Problem Solving, Problem Solving Strategies, Top-Down Approach, Algorithm Designing, Primitive Data Types, Variables, and Constants, Structure of C program, Basic Input and Output, Operators, Expression Evaluation, Type Conversion.

UNIT II: Control Statements (12 hours)

Control Flow, Decision making statements, Looping/Iterative statements and Branching statements.

UNIT III: Arrays, Pointers (8 hours)

Introduction, Operations on Arrays, Two Dimensional Arrays, Multidimensional Arrays. Pointers: Concept of a Pointer, Declaring and Initializing Pointer Variables, Pointer Expressions and Address Arithmetic, Null Pointers, Generic Pointers, Pointers and Arrays, Pointer to Pointer, Dangling Pointer, Command Line Arguments.

UNIT IV: Strings, Functions, Recursion (9 hours)

Strings: String Fundamentals, String Processing with and without Library Functions, Pointers and Strings. Introduction to Function: Declaration, Function Definition, Function Call, Categories of Functions, Passing Parameters to Functions as call by value, call by reference,

Arrays as Function Arguments, Pointers as Function Arguments, Scope of Variables, Variable Storage Classes. Recursion.

UNIT V: DMA, User Defined Data types, File Handling (9 hours)

Dynamic Memory Allocation, Structures, Unions: Dynamic Memory Allocation, Introduction to Structures, Nested Structures, Arrays of Structures, Structures and Functions, Self-Referential Structures, Unions, Enumerated Data Type - Enum variables, Using Typedef keyword. Data Files: Introduction to Files, Using Files in C, Reading from Text Files, Writing to Text Files, Random File Access.

Text Books:

1. Programming for Problem Solving, Behrouz A. Forouzan, Richard F.Gilberg, Cengage.
2. How to solve it by Computer, R. G. Dromey, and Pearson Education.
3. Programming In C A-Practica1 Approach. Ajay Mittal, Pearson

Reference Books:

1. Byron Gottfried, Schaum's Outline of Programming with C, McGraw-Hill.
2. Computer Programming. Reema Thareja, Oxford University Press
3. The C Programming Language, Dennis Richie And Brian Kernighan, Pearson Education.
4. Programming In C, Ashok Kamthane, Second Edition, Pearson Publication.
5. Let us C ,YaswanthKanetkar, 16th Edition,BPB Publication.
6. Computing fundamentals and C Programming, Balagurusamy, E., McGraw-Hill Education, 2008

Web References:

1. http://www.c4learn.com/
2. http://www.geeksforgeeks.org/c/
3. http://nptel.ac.in/courses/122104019/
4. http://www.learn-c.org/
5. https://www.tutorialspoint.com/cprogramming/

CO PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	-	-	-	-	1	1	-	-	-	-	1
CO2	3	2	-	-	1	1	1	-	-	-	-	1
CO3	3	2	-	-	1	1	1	-	-	-	-	1
CO4	2	2	2	3	1	1	1	-	-	-	-	1
CO5	2	2	2	3	-	1	1	-	-	-	-	1